Joint Warfare System (JWARS)

Release 1.4 Status

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Agenda

- **Revised JWARS Development**

- **Key Events**

- **Developer Testing (DT)**

- **Functionality**

- **Recent Enhancements**

- **Runtime Performance**

- **Near Term Development**

- **For each formal Release (1, 2, and 3)**
  - **Meet ORD requirements**
  - **Conduct Beta Testing**
  - **Conduct OT&E**
  - **Obtain formal approval for distribution**

- **For Release 1**
  - **Release 1.4 incorporates all warfare functionality required for Release 1**
    - **55 threads, more than threshold 51 threads**
  - **Conduct two cycles of external testing**

Revised Development Approach

- **Release 1.4 becomes JWARS Baseline to begin Life Cycle Management.**
  - **JWARS Office "locks functionality" at Release 1.4.**
- **Release 1.4 undergoes Functional & Beta Testing.**
  - **Substantive testing conducted by Washington DC-area sites.**
  - **Non-DC-area sites Beta test as desired and able.**
- **JWARS CCB begins Life Cycle Management at Release 1.4.**
  - **Responsible for Configuration, Maintenance, User Support and Release Scheduling.**
- **Future configurations and schedules driven by:**
  - **ORD**
  - **Needed fixes**
  - **New needed functionality**
  - **Budget constraints**
- **Releases 2 and 3 are incorporated into incremental**

- **Revised development approach must be approved by the Joint Requirements Oversight Council (JROC)**

- **JROC schedule**
  - **JROC Review Panel (O-6 level)   11 Jun**
  - **JROC Review Board (2 star level)   26 Jun**
  - **JROC - probably handled via paper submission**

Key Events

- **Developer Testing completed** **9 May**
- **Release 1.4 declared** **10 May**
- **High Level Design Review for Space Enhancements 3 June**
  - **DSP Enhancements**
  - **GPS-guided weapons**
- **Distribution of JWARS CDs - 2 shipments**
  - **Output, V&V documentation, Installations** **10 June**
  - **Documentation** **24 June**
- **CCB (J-8 lead)** **late June**
- **Beta testing** **1 July**
  - **User testing by Beta sites**
  - **Technical Testing by D.C. Beta sites (JST)**
- **JAMIP Steering Committee** **17 July**

Developer Testing

- **Goals**
  - **Thoroughly test simulation**
  - **Ensure it runs properly to completion**
  - **Know what functionality is in / out**
- **Locations: JWARS Annex and JWARS Office**
- **Approach**
  - **Test at system level**
  - **Use Packaged or Open image**
    - **Modify scenario data through GUIs or JWARS Import/Export tables**
    - **Do not change code**
  - **Employ JWARS SWA scenario (discussed later)**
- **Scope**
  - **Functionality implemented in Release 1.4 Work Packages**
  - **Features not previously tested or not fully "Passed"**
  - **Internal Change Requests (ICRs) that have been addressed and are ready for testing**

Developer Testing Results

Responsible IPT	Features				ICRs		
	Tested	Pass	Conditional Pass	Fail	Tested	Pass	Fail
Air & Space 1	38	29	9	0	46	45	1
C4ISR	12	9	3	0	10	10	0
Commo	9	9	0	0	5	5	0
Land	24	14	8	2	32	23	9
Maritime	50	37	8	5	42	40	2
Sustainment	26	17	6	3	2	2	0
TBMD / Chem	23	23	0	0	30	25	5
T & L	29	26	3	0	45	45	0
Total	211	164	37	10	214	197	17

Responsible IPT	Rel 1.4 DT Results	Cum thru Rel 1.4
Passed	164	673
Conditional Pass	37	41
Failed	10	35
Not Tested	49	32
Req for Rel 1		781
Post Rel 1		16
Deleted		25
Total		822

Results of Release 1.4 Warfare Work Packages

Command and Control

Yes	JTF C2
Yes	Land Maneuver Planning
Partial	**Air Unit C2 and Air Superiority**
Yes	Improved JFMCC C2

Communications and ISR

Yes	Collection and Processing
Yes	Improved Communications

Maritime Warfare

Yes	Surface Ship on Submarine
Yes	Naval Gun Fire Support
Yes	Maritime Air Operations

Air Warfare

Yes	Suppression of Enemy Air Defense
Yes	JTCB Component Commander Assets
Yes	JTCB Runtime Performance
Yes	JTCB Features
Yes	Air Defense
Yes	Flight Group C2

TBMD and WMD

Yes	TBMD Upper Tier
Yes	TBMD BMC3
Yes	WMD Improved Effects

Transportation and Logistics

Yes	Strategic Deployment Flow Scheduler
Yes	Improved Installations
No	**Multi-Modal Intratheater Transportation**
Yes	Logistics C2 Sustainment
Yes	Maritime Sustainment
Yes	Air Unit Sustainment
Yes	Land Sustainment

Note: For some work packages, implementation has limitations.

JWARS Release 1.4 Functionality

Limited IOC Functionality	Rel 1.4 Status	Limited IOC Functionality	Rel 1.4 Status	Limited IOC Functionality	Rel 1.4 Status
C4ISR		**Air**		**Transportation & Logistics**	
Intelligence *	Impl	Dynamic ATO Planning	Impl	Intertheater Lift Scheduling	Impl
Sensing *	Impl	CAS C2 & Execution	Impl	Intertheater Lift Reschedule	Impl
Reconnaissance *	Impl	Cruise Missiles	Fnl	Intertheater Lift Movement	Impl
Perceived Truth	Impl	Operational C2	Impl	Intratheater Road Transportation	Impl
Indications & Warning *	Impl	JTCB Planning	Impl	Intratheater Air Transportation	Not Impl
Communications	Impl	Air Defense (Surface-to-Air)	Impl	Intratheater Rail & Pipeline Trans	Not Impl
JTF Command and Control	Impl	Counter Air (Air-to-Air)	Impl	Air POD and Sea POD Operations	Impl
Collection Plan	Impl	Attack / Interdiction (Air-to-Ground)	Impl	Logistics C2 Sustainment	Impl
		Fleet Air Defense	Impl		
Land		Air-to-Surface	Fnl	**Special Operations**	
Maneuver	Impl	Air-to-Subsurface	Not Impl	Special Reconnaissance	Impl
Direct Fire	Impl	Mine Warfare (Air Dep'd Mines)	Not Impl	Direct Action (DA) - Forcible Entry	Impl
Indirect Fire	Impl	Suppression of Enemy Air Def	Fnl	DA - Control Long Range Fires	Impl
Forcible Entry (Airborne)	Impl	Air Unit Sustainment	Impl		
Attack Helicopters	Impl				
Improved C2	Impl	**TBM / TBMD**		**Environmental Effects**	
Maneuver Planning	Impl	Threat Missile	Impl	Terrain	Impl
Land Sustainment	Impl	Airborne Laser	Impl	Networks (Land)	Impl
		DSP Cueing *	Impl	Weather	Fnl
Maritime		Integrated TBMD C2	Fnl	Oceanographic	Fnl
Surface to Surface	Impl	Enhanced Lower Tier	Impl		
Submarine on Ship	Impl	Enhanced Upper Tier	Impl		
Naval Blockade	Impl				
ASW (Submarine on Submarine)	Impl	**WMD**			
Mine Warfare (Ship Dep'd Mines)	Impl	Chemical Offense	Impl		
Naval Gun Fire Support	Impl	Chemical Defense(MOPP)	Impl		
Forcible Entry (Amphibious)	Impl	Unit Effects (Land and Air)	Impl		
C2	Impl	Unit Effects (Installations)	Impl	* Include **Space Force**	
ASW (Ship on Submarine)	Impl			**Enhancement** functionality	
Maritime Sustainment	Impl				

Key | Impl Implemented | Fnl Functional, with Limitations | Not Impl Not Implemented

Important New Warfare Functionality

- **Air and Space**
  - **SEAD - standoff jammers and standoff lethal (HARM) shooters**
  - **Creation of push periods in junction with SEAD**
  - **JTCB target list uses Fire Support Coordination Line (FSCL)**
- **C4ISR**
  - **Dynamic/reactive Collection Planning**
  - **Implementation of Knowledge Base**
- **Land**
  - **Maneuver planner**
- **Maritime**
  - **Order handler - improved C2**
  - **Air support to maritime operations**
  - **Improve amphibious operations**
- **TBMD**
  - **New TBM Trajectory Model, Campaign-Level Radar Detection Model, Interceptor Model - algorithms provided by MDA**
- **Transportation and Logistics**
  - **Assets accounted for in strategic flow**
  - **Sustainment for land, air, and maritime**

Recently Enhanced User Capabilities

- **JWARS Analysis Repository (JAR) -** *new*

- **Transportation and Logistics Modes (at POE, at POD, at Destination) -** *new*

- **Instrument Generation -** *new*

- **Instruments -** *major revision*

- **High Level Interface -** *major revision*

- **Map Based Scenario Editing -** *new*

- **Order of Battle (OOB) Editing -** *improved*

- **Enhanced Security Features -** *new*

- **Video Playback -** *major revision*

- **Environment Scenario Loading -** *new*
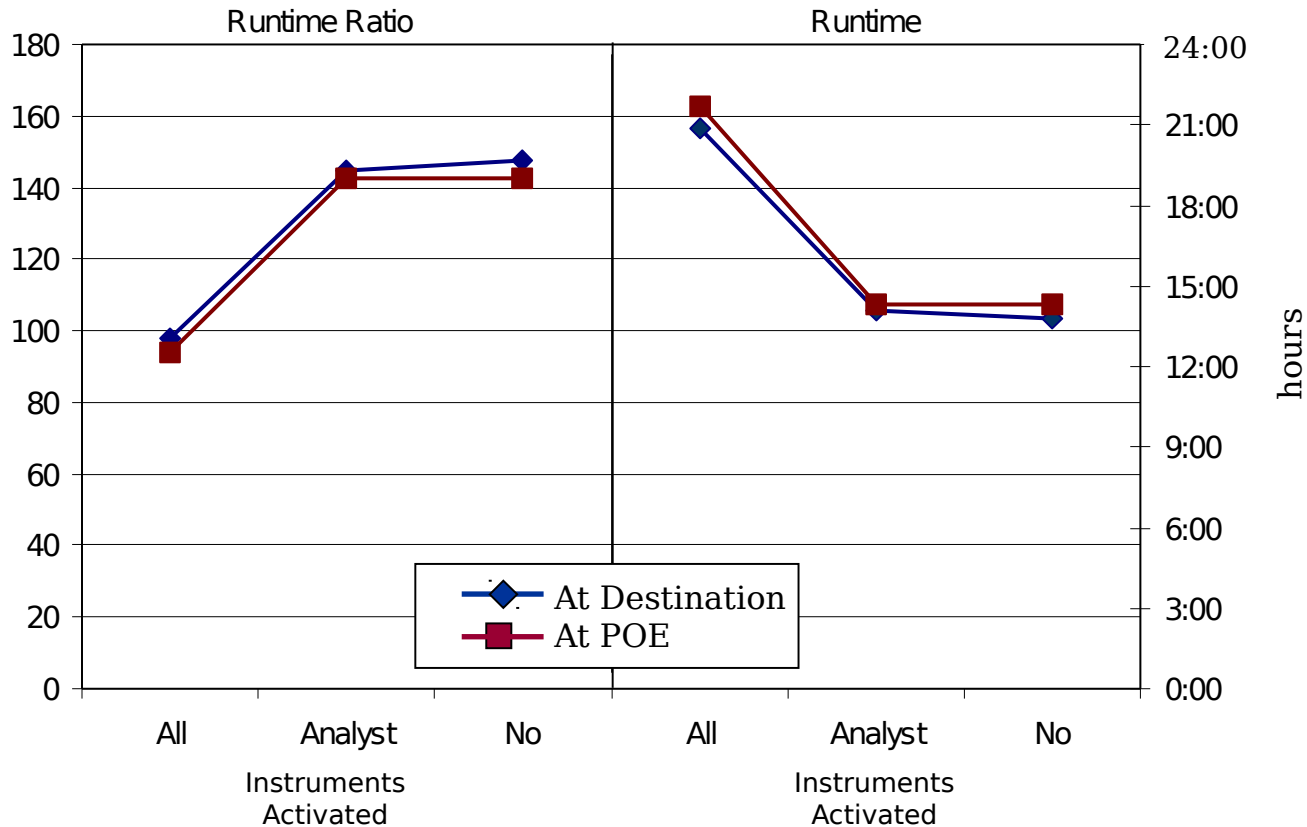
- **Excursions -** *new*

- **Title: JWARS SWA**
- **Derivative of JTF East Full**
  - **Smaller than JTF East Full / larger than Micro Gold**
- **Size: 2,535 static BSEs**
  - *U.S. and Friendly Coalition: 2,058 total*
    - *Land and SOF: 180 BSEs*
    - *Maritime and Marine Forces: 245 BSEs*
    - *Air: 78 Squadron BSEs, containing Bomber, Fighter, R&S, ABL, C2, Attack Helicopter*
    - *TRANSCOM: 840 BSEs*
    - *Installations and Facilities: ~800*
  - *Threat: 477 total*
    - *Land: 154 BSEs*
    - *Maritime : 115 BSEs*
    - *Air: 8 Squadron BSEs, containing Bomber, Fighter, Attack Helicopter*
    - *Installations and Facilities: ~ 200*
- **Duration: Tested to 85 days**

Runtime Performance Data

Runtime Ratio   Runtime

hours

- ◆ At Destination
- ■ At POE

All Analyst No   All Analyst No

Instruments Activated   Instruments Activated

Run conditions
Platform: Sun 5000 400mHz
Source Code: R1.4 SR0.40v, packaged image
Scenario: JWARS SWA, R1.4SR0.40zq
Duration: 85 days
"Analyst" instruments: 40 representative instruments

Additional data (Analyst Instruments/At POE case)
Initialization time: 44 min
Export (617K records)
    To CSV files: 47 min
    To JAR: 4:05 hrs

Bottom Line: Much Work to Do

Release 1.4 Documentation

Overview Information

- **Related Files Document**
- **Documentation Outline**
- **JWARS Leadership Support Plan**

User Information

- **User Manuals**
  1. Executive Overview
  2. Basic Operation
  3. Joint Analyst Guide
- **Training Materials**
- **Post Processing Tools**
- **Data**
  - JDS Introduction
  - Data Specification Review Summary
  - Data Support Plan
  - Data Documentation Project
  - JDS Study Support

Software Engineering

- **High Level Design**
- **Detailed Design**
- **Test Documentation**
- **V&V Reports**

System Administration

- **Installation Manuals**
- **Help Desk Guide**
- **Hardware and Software Specifications**
- **Security, Certification and Accreditation**
  - SSRS
  - SSAA
  - CT&E Plan, Test Cases and Procedures
  - Risk Assessment

Near-term Development Effort

- **Fixes discovered during Beta testing**
- **User funded efforts**
  - **Air on submarines (Navy)**
  - **GPS-guided weapons (JSSPAR)**
  - **DSP enhancements (JSSPAR)**

  Discussed in JSSPAR Brief
- **CCB directed development**
- **Maintenance**

JWARS Release 1.4

Timeline

Training

•Update Courses--quotas from JWARS Office

•Analyst Courses--quotas through Help Desk

Help Desk

? Help Desk

Joint Models Web site
- Registration required
- Library of JWARS documentation
- On-line JCR input & tracking via SIPRNet
- https//www.jointmodels.smil.mil

JWARS
Rel 1.4

Installation

CDs mailed Mid June to Test Sites

Beta Testing
•Jul - Dec
•User Testing
•Technical Testing

Beta Test Report

Configuration Management

CCB

Jun CCB Kickoff (review work plan, JCRs)

WG Mtgs. as needed

Jan 03 CCB Meeting (final JCR prioritization)

Final JCR cutoff

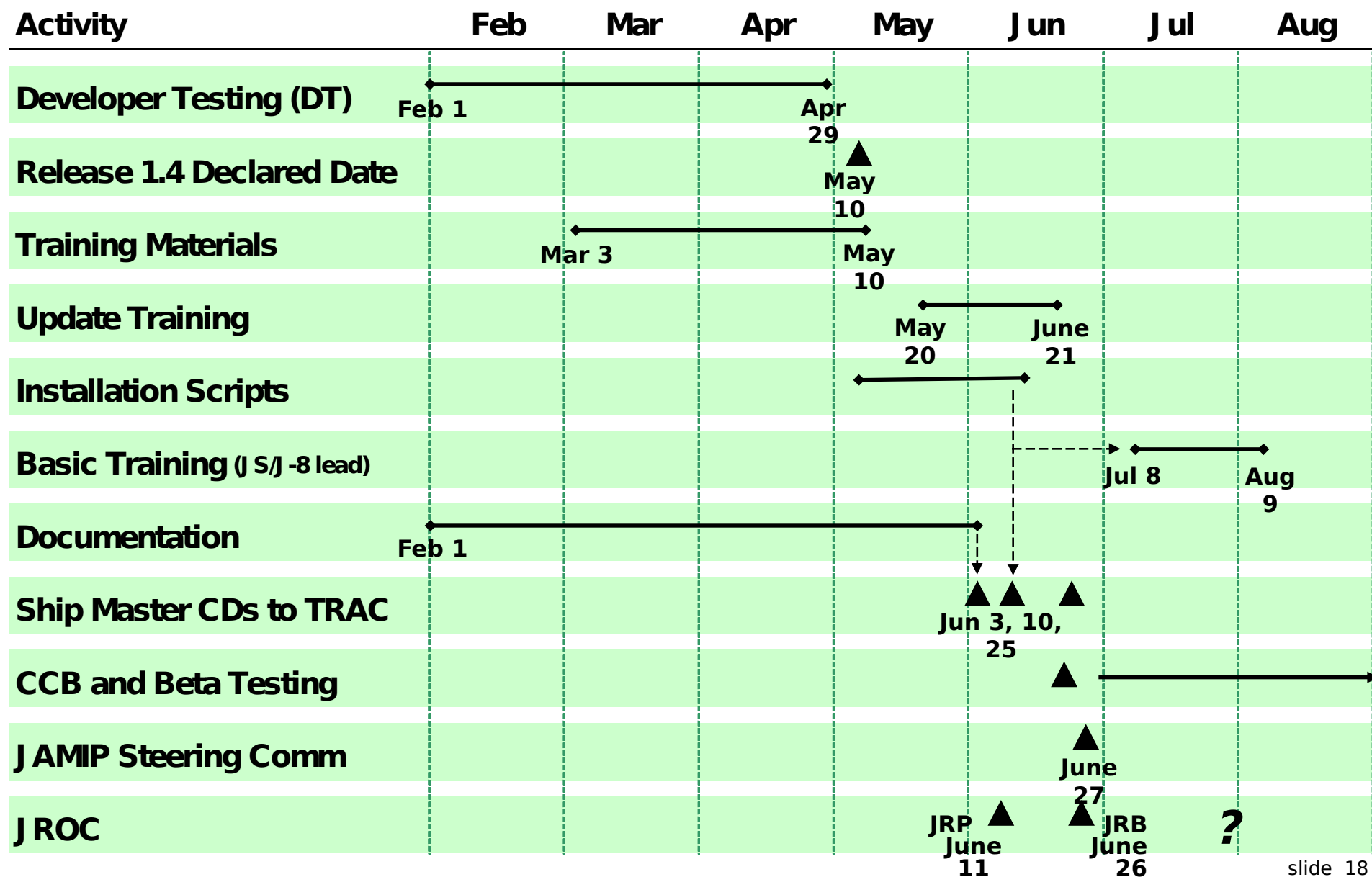Monthly JCR "cutoff" dates to facilitate review, scope & fix

Near Term Schedule

Activity	Feb	Mar	Apr	May	Jun	Jul	Aug

Developer Testing (DT) — Feb 1 ──────────► Apr 29

Release 1.4 Declared Date — ▲ May 10

Training Materials — Mar 3 ──────────► May 10

Update Training — May 20 ──────► June 21

Installation Scripts — (May–Jun) ──────►

Basic Training (JS/J-8 lead) — Jul 8 ──────► Aug 9

Documentation — Feb 1 ──────────────►

Ship Master CDs to TRAC — ▲ ▲ ▲ Jun 3, 10, 25

CCB and Beta Testing — ▲ ──────────────►

JAMIP Steering Comm — ▲ June 27

JROC — JRP June 11 ▲ ▲ JRB June 26 **?**

slide 18

Back Up

- Technical Testing (Washington DC)
  - Falls under Beta Testing
  - J-8 has ownership, OSD/SAC coordinates
  - Team comprised of JST, JDS, JWARS Office, V&V and other user representatives
  - Conducted in parallel over 6 month period
  - Snippet "lite" approach consisting of functional testing, software code walks, and documentation review
  - Feedback provided via JCRs and oral debriefings
- Status
  - Initial support estimates provided 27 March
  - Draft test plan completed 12 April
  - Final plan and schedule upon delivery/review of DT results and documentation

Initial JWARS Change Request (JCR) Database

- **JWARS Office will provide initial set of JCRs for JCR Database.**

- **Sources**
  - **Functionality associated with 55 threads of "Release 1" that have not been implemented or for which DT failed (e.g., see slides 4-5)**
  - **Other outstanding ORD requirements (e.g., runtime performance, checkpoint-restart)**
  - **Outstanding ICRs that have Priority 1 or 2, or that require significant level of effort**

- **JWARS Office will provide JCRs to JS/J-8/SAMD**

- **JS/J-8/SAMD will manage JCR Database through JWARS Help Desk.**
  - **During testing, Beta Test sites and JWARS Office will submit additional JCRs.**

- **JWARS Configuration Control Board (CCB) will prioritize JCRs.**

Near Term Schedule

Activity	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Documentation										
Update Training	**started May 20** → Jun 21									
Basic Training		Jul 8 → Aug 9								
CCB	**? - TBD**							▲		
JWARS CD shipped	▲									
Beta Testing										
Beta Test Report								▲		
Scenario Development										
Rel 1.5 Development										
Rel 1.5										**Mar - Apr**